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IMPROVED SAFETY FOR ENCRYPTED PICTURE TRANSMISSION: A COMPREHENSIVE SURVEY

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Abstract

The structure of communication networks is increasingly rising in today's world due to the amount of user interactions increasing day by day. Network data transmission is simpler, but security is a measure of concern, such that a number of researchers emphasize focusing and solving the security problem through data sharing from one terminal to another. Data is a type of text, image, video, audio, etc. Since these data are transmitted over the network, for different data sets, the number of different encryption standards is easier. In other words, for that RSA text, AES is better, chaotic map image encryption is similarly more suitable for many more encryptions and vice versa. We discuss different image encryption methods for image protection against unauthorized access in this paper. But they all work against unauthorized access control, so in this paper we proposed an improved security mechanism for protecting the communication network from not only unauthorized access, but also defending it through network attack, i.e. black hole, grey hole, packet falling, etc., when communication link data is transmitted.

Keywords: *Cryptography, Data, Healthcare, Information System, Date safety, Protection.*

I. INTRODUCTION

Cryptography is the science of preserving the privacy of information under hostile conditions in communication. Cryptography takes on particular significance in the modern age of information technology and proliferating computer network communications [1]. In order to protect electronic fund transactions and secret messages, cryptography is currently generally used to defend information that should be shared and/or stored over long periods. In the last two decades, the

sharing of data in the form of photographs has also gained widespread attention. Therefore, safe transmission of image data is also a cause of concern. As shown in Figure 1, the entire transmission and receipt process can be depicted [2].

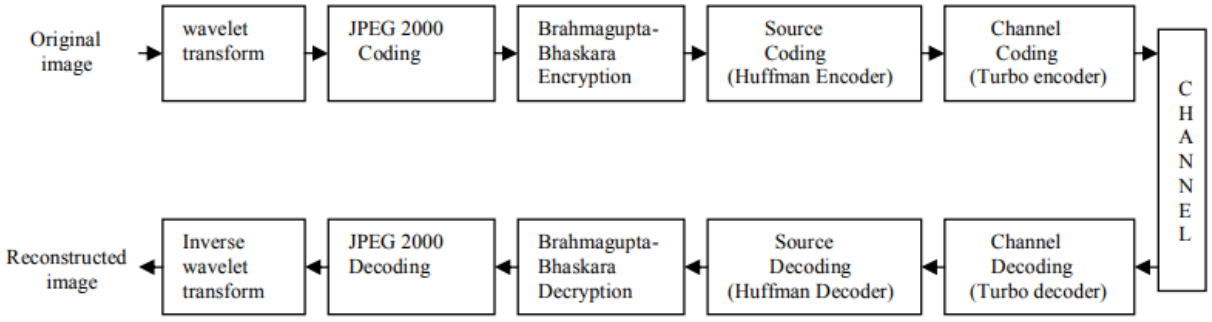

Fig. 1: Illustrates the block diagram of the transmission and reception arrangement [3]

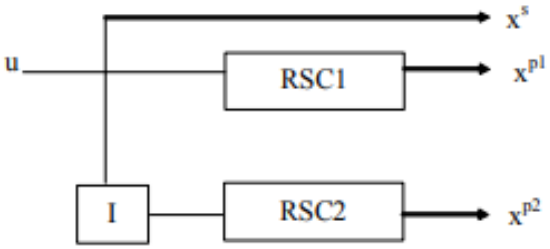

Fig. 2: Illustrates the Turbo- encoder [4]

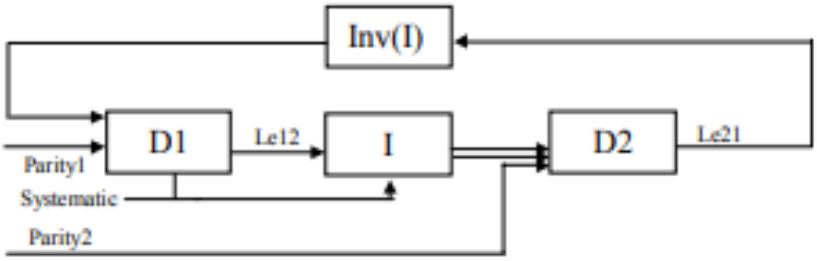

Fig. 3: Illustrates the turbo- decoder [5]

$$E(x) = \frac{1}{N}\sum_{i=1}^{N} x_i$$

$$D(x) = \frac{1}{N}\sum_{i=1}^{N}(x_i - E(x))^2$$

$$cov\,(x,y) = \frac{1}{N}\sum_{i=1}^{N}(x_i - E(x))\;(y_i - E(y))$$

$$r_{xy} = \frac{cov\,(x,y)}{\sqrt{D(x)}\sqrt{D(y)}}$$

$$\sqrt{D(x)}\; \neq 0, \sqrt{D(y)} \neq 0$$

The NPCR and UACI can be calculated by utilizing the following equation [6]. Figure 2 illustrates the Turbo- encoder. Figure 3 illustrates the turbo- decoder.

$$NPCR = \frac{1}{M \times N}\sum_{i=1}^{M}\sum_{j=1}^{N} D(i,j) \times 100\ \%$$

$$UACI = \left[\sum_{i=1}^{M}\sum_{j=1}^{N}\frac{|C1(i,j) - C2(i,j)|}{255}\right] \times \frac{100\%}{M \times N}$$

II. LITERATURE REVIEW

Boukerche et al. performed a study using trust-based multicast systems on a stable mobile healthcare system. The rapid growth of wireless and mobile networks has stimulated large implementations of mobile electronic healthcare systems leading to the implementation of telecommunication technology in telemedicine services. Protection, however, is an important requirement of the system since many patients have privacy issues when it comes to sharing their personal details over open wireless networks. For this purpose, this research examines the characteristics and security concerns of a ubiquitous and mobile healthcare system consisting of a variety of mobile devices and sensors connected to a patient with wireless and pervasive data communications [7].

III. DISCUSSION AND CONCLUSION

Although the transmission rate of the AquaSeNT modems was fast, a relatively small number of bytes per packet was limited to the transmission. The data for the picture was too huge to send. By resizing the picture and converting it to hexadecimal, we solved this problem so that the data could be split into packets. For each packet and the transmitted data, a standard header for sending messages was added. Packets were rarely lost, most likely because the transmission was achieved with shallow water and just a short distance between the modems in a regulated laboratory environment. In a complex, unpredictable environment, with a broad range of distances and water depths, further experiments should be conducted. Other compression methods should be investigated. A graphical user interface (GUI) developed by a colleague at the University of Connecticut has introduced the current process.

IV. REFERENCES

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